openreach

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Suppliers' Information Note
For The Openreach Network

OPENREACH BACKHAUL EXTENSION SERVICES 2500 (BES 2500)

Service Description

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Introduction

This Suppliers' Information Note (SIN) describes the Openreach Backhaul Extension Services 2500 (BES2500). The SIN also provides information about the service for use by Customer Premises Equipment (CPE) manufacturers and developers.

For further information please refer to the contacts listed in Section 5.

Note: Openreach has provided formal notification that the BES2500 products are no longer available for new supply with effect from 11 May 2016. External shifts (re-sites and re-arranges) are also not available from this date.

Service Outline

The BES 2500 service operates at a speed of 2.488Gbit/s (STM-16 rate as defined in ITU-T recommendation G707 [1]).

The BES 2500 service can be used to provide transparent transport for equipment with STM-16 interfaces such as SDH equipment, ATM switches or IP routers with POS interfaces.

The service is available as a unprotected BES 2500 service:

The BES 2500 service is an unprotected service. However if protection against both network fibre breaks and card failures is sought, 2 BES 2500 services may be used. The use of 2 BES 2500 circuits to provide additional resilience will result in 2 customer interfaces being presented at each site.

A typical BES 2500 service is shown in Figure 1.

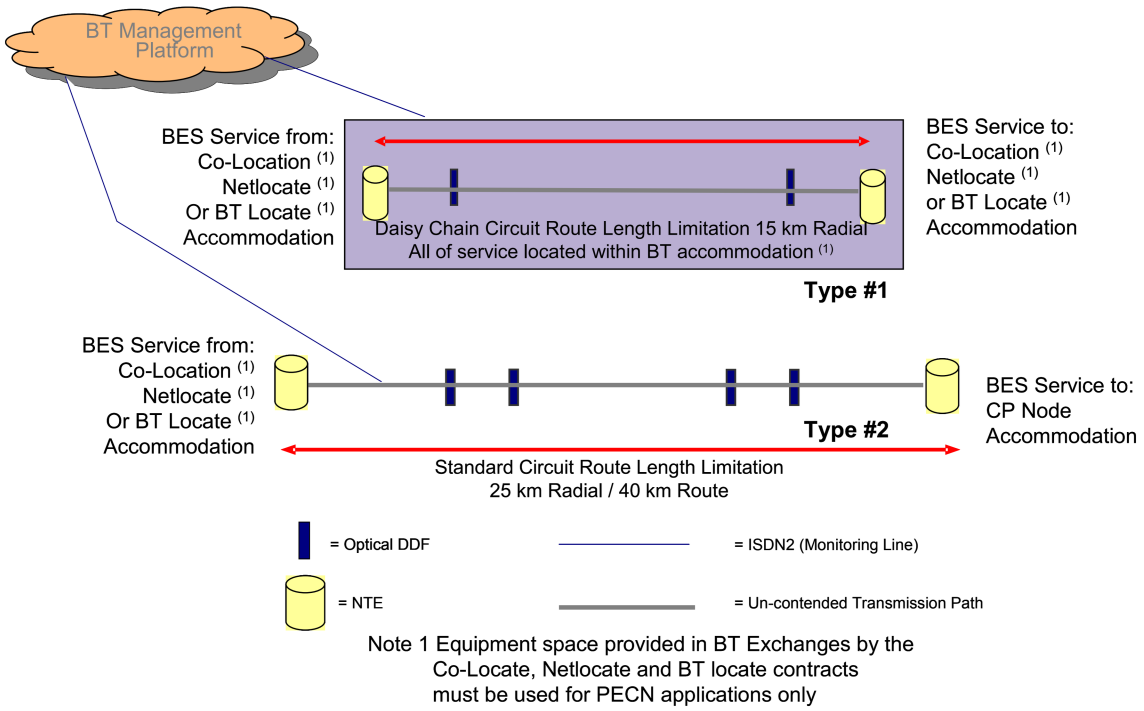

Figure 1. Typical BES 2500 configurations

Technical Specification

Interface

The BES 2500 NTE support the following customer interface:

2.488 Gbit/s STM-16 SDH
S16.1 optical presentation conforming to ITU-T Recommendation G.957 [2] and G.707 [1].

The interface is the Network Termination Point (NTP), i.e. the point of connection between the Openreach Network Terminating Equipment (NTE) and the CPE interface. The Customer Interface consists of a pair of SC/PC type fibre interface ports (transmit and receive). The customer provides the fibre patch connectors between the NTE and CPE; the maximum fibre length is shown in Table 1.

The STM-16 S16.1 interface is as specified in ITU-T G.957 [2] recommendations. Attention is drawn to the Intellectual Property Rights (IPRs) set out in the preface of this agreed International standard. It is the responsibility of the CPE supplier to ensure that they have the necessary rights from the owner of the IPR. The IPR owner has stated that they are willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world.

Protocol	G.707 STM-16 according to ITU-T G.707
Line Rate	2.48832 Gbit/s
Power Requirement	See Section 4.2
Customer Fibre Connector	SC/PC type
Customer interface Fibre ***(Customer provided)***	Single-mode 1310nm, 9/125 micron
Customer interface Fibre Maximum Delivery Distance	10km from NTE's customer port.
Operating Temperature	5° to 40° C
Laser Safety	Class 1 under all conditions as per IEC 825-1 [3]

Table 1. STM-16 customer interface NTE technical specification

Network Fibre Break

In the event of a network fibre break, a LOS (Loss of Signal) is generated at the customer interface. The generation of the LOS condition is achieved by shutting down the customer port on the BES 2500 NTE.

Transparency

The BES 2500 service will transport SDH signal without any modification to the SDH overhead.

Physical Arrangements

Physical Location of Connectors

The User–Network Interface (UNI) is located at the connector on the BT Network Terminating Equipment (NTE) with a connector on the Customer side as described in the relevant part of Section 3 of this document.

NTE Power Supply Requirements

General

By placing a order with Openreach the customer has accepted the conditions placed by Openreach. In relation to powering of equipment, the customer must comply with the requirements of BS7671 and the details giving within the 'DC Power Planning and Installation Guide for WES-BES Products' document.

The Openreach NTE is locally powered and offers AC or DC power options. The CP will be required to provide either a local 50Hz AC supply in the form of two standard 13 Amp power socket(s); or dual -50V DC power distributions and Earth connections, with all wiring colour schemes conforming to BS7671 (IEEE Wiring Regulations). It will be the customers' responsibility to ensure that the power supply is fused and safe for Openreach to use. These should be in close proximity to the NTE installation location.

Installation and Testing

In addition to the NTE and Chassis powering requirements below, a spare 50Hz AC mains supply 13A socket should also be provided in close proximity to the NTEs, to power BT test equipment during both initial commissioning and subsequent maintenance support activities.

AC Power connection

AC power connection between Openreach equipment and the power socket will be made using a standard IEC320 C13-14 power lead fitted with a standard 13A plug. The NTE itself has dual power supply units and requires connection to two AC mains supply sockets.

> This will require two mains connection for each NTE provided, and the consumption of the Openreach NTE will be no more than 150 Watts per NTE.

DC Power Connection

The DC In-Line (Molex) connector is specified as the standard method of connecting DC power by Openreach, and represents the "Demarcation Point" between Openreach and the customer. At their site, the customer is required to provide suitable power and earth connection to, and be responsible for the supply, wiring and labelling to the demarcation point. Openreach will not supply or install the DC distribution system as part of the standard Ethernet installation.

- ***Customer provided wiring up to the Openreach specified In-Line connector.*** Wiring, MCB isolation or fuse (i.e. C Type MCB or Cartage Fuse), must be provided by the customer, up to and including the DC in-line connector, as per

BT's requirements stated within the 'DC Power Planning and Installation Guide for WES-BES Products' document with respect to;

(i) Correctly rated MCB/Fuse,

(ii) Correct labelling of wiring and MCB/fuse positions compliant with BS 7671,

(iii) Correct size of cable for required voltage drop at required maximum current,

(iv) Separately fused isolatable A & B power supplies, as detailed in the 'DC Power Planning and Installation Guide for WES-BES Products' document.

The in-line connector has a maximum current handling capability of 6A, and is not to be used for equipment requiring greater than a 6A supply (such as the Nortel Optera 5200 equipment, which require 20A feeds).

Additional Details

For further details on the provision of DC Power, see the 'DC Power Planning and Installation Guide for WES-BES Products' available on the Openreach Ethernet website.

If there is a conflict between DC power information contained in the 'DC Power Planning and Installation Guide for WES-BES Products' and the SIN document, the order of precedence shall be as follows:

(a) DC Power Planning and Installation Guide for WES-BES Products

(b) SIN

Service Availability and Tariffs

For further information on service availability and tariffs please contact your Openreach Customer Business manager, or see http://www.openreach.co.uk/orpg/products/bes.do

References

[1]	ITU-T Recommendation G.707 Network node interface for the synchronous digital hierarchy (SDH) SIN 333 SDH Customer Interfaces at the STM-N level (where N=1,4,16)
[2]	ITU-T Recommendation G.957 Optical Interfaces for Equipments and Systems Relating to the Synchronous Digital Hierarchy
[3]	IEC 825-1, International Electrotechnical Commission (IEC) Standard – Safety of Laser products Part 1
[4]	BTNR 2511 - Interface of telecomms equipment with a nominal 48v negative dc power supply

For further information or copies of referenced sources, please see document sources at
https://www.openreach.co.uk/orpg/home/helpandsupport/sins/sins.do

Abbreviations

BT	British Telecommunications plc
CPE	Customers' Premises Equipment
IEC	International Electrotechnical Commission
IPR	Intellectual Property Right
LAN	Local Area Network
LOS	Loss of Signal
MCB	Mini Circuit Breaker
NTE	Network Termination Equipment
NTP	Network Terminating Point
POS	Packet over SONET (SDH)
SDH	
SIN	Suppliers' Information Note [BT]
STM	Synchronous Transport Module
UNI	User-to-Network Interface

History

Issue	Date	Revision changes
Issue 1.0	29 Sep 2006	First issue.
Issue 1.1	30 Oct 2007	Service description amended in accordance with updated DC power guidance

Issue 1.2	June 2010	Clarification to Sections 3.3"Transparency" Changes to 4.2.3."AC Power Connection", updating description by which power is to be provided
Issue 1.3	January 2015	Change SINet site references from http://www.sinet.bt.com to http://www.btplc.com/sinet/
Issue 1.4	August 2016	Addition of note in section 1 to state that these services are no longer available for new supply as from 11 May 2016.
1.5	August 2020	Changes to branding, from BT to Openreach including changes to reflect new Openreach SIN site and Openreach SIN email address
1.5	July 2021	Annual Review – no changes required – issue remains unchanged.
1.5	July 2022	Annual Review – no changes required – issue remains unchanged.
1.5	July 2023	Annual Review – no changes required – issue remains unchanged.
1.5	August 2024	Annual Review – no changes required – issue remains unchanged.

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